PERMIT CHECK LIST

The following people have reviewed the permit:

Reviewing Permit Writer: _____

Air Compliance Manager: _____

Date: August 17, 2016

Source Name: Riverside Regional Medical Center Registration Number: 60436

Source Location: 500 J. Clyde Morris Blvd., Newport News, Virginia

Mail Address: 500 J. Clyde Morris Blvd., Newport News, Virginia 23601

Source Status: ___ Greenfield ✓ Currently operating

Source Classification: ___ Minor ✓ SynMinor ___ State Major ___ PSD Major ___ TV Major

Permit Action: The Source has submitted a Form 7 application requesting the installation and operation a 16.329 MMBtu/hr dual-fuel steam boiler and a 1,500 kW diesel-fired emergency generator at the medical facility. In order for the medical facility to accomplish this, it was necessary to change (reduce) the combined #2 distillate oil throughput for the facility's boilers currently permitted in the June 1, 2011 SOP such that the facility's NOx emissions would remain below the 100 tons/yr major threshold level. In addition, the #2 distillate oil will only be used as a back-up fuel during periods of natural gas curtailment and/or supply interruption.

✓ **Inspector Contacted/Consulted**

Permit Action Program:

___ NSR ✓ SOP ___ TV ___ Major HAP ____ General

Permit Action Type:

___ Exemption

___ New / Article 6 Modification (*delete one*) ✓ Significant Amendment

___ Minor Amendment/Modification (*delete one*) ___Administrative Amendment ___ Renewal

___ State Major ___ PSD ___ Non-Attainment ___ General Permit

Y (Y/N) Permit Includes All Emission Units at Source.

Y (Y/N) Permit Allows Source to avoid Title V/MACT/etc.

Source Classification

After this permit, source is: ✓ Synthetic minor (SM) for SO_2 & NOx Pollutants

Permit Application Review

Application ✓ Letter ___ (*select one*) Received Date: June 23, 2016

Application Complete Date: August 16, 2016

Permit Fee Paid Date: August 2, 2016

Permit Deadline Date: February 12, 2017

✓ Document Certification Form received

This permit supersedes permit(s) dated: June 1, 2011.

Regulatory Review for this Action

BACT Determination (check one):

___ [*Control Strategy/Equipment*] @ ___ % efficiency for the control of ____ meets BACT (Comments), or

✓ TV/SOP/BACT not applicable. (Explain) SOP amendment

Y (Y/N) NSPS/MACT/NESHAPS Applicability: If Y, Subpart(s):

Dc and IIII NSPS

ZZZZ, (JJJJJJ - potentially) MACT

_N_ (Y/N) Existing Rules (9VAC5 Chapter 40) Applicability

Toxic Pollutants (*check one*):

_✓_ Exempt, or ___ in compliance with 9VAC5-60-220, or ___ not evaluated

Modeling (check one):

___ Attached (including background monitors), or

___ Copy of approval letter from modeling section,

_✓_ No modeling required by agency policy (< modeling significance levels, etc.)

Site Suitability:

_✓_ Site suitable from an air pollution standpoint, inspection date: March 5, 2013.

_Y_ Calculation sheet(s) attached

Permit includes: ___ Stack Testing ___ CEM ___ VEE by source _✓_ VEO by source

Public Participation

_Y_ (Y/N) Public Noticed. If yes, Public Notice Date: **Tuesday, September 13, 2016**

_N_ (Y/N) Public Notice Comments

_N_ (Y/N) Public Hearing

EPA Review

_Y_ (Y/N) EPA Review. If yes, Date proposed permit sent to EPA: **Friday, September 9, 2016**

_N_ (Y/N) EPA Comments

Permitting Analysis:

I. Introduction

Riverside Regional Medical Center (Source) is a 450-bed general medical and surgical hospital facility located on J. Clyde Morris Boulevard in Newport News. In 1963, Riverside moved its operations to the present 72-acre site location in Newport News. The hospital facility's current State operating permit (SOP) issued on June 1, 2011 included eleven (11) stationary diesel-fired emergency generators ranging in emergency power product from 100 up to 1,500 kilowatts (kW) and five (5) natural gas/distillate oil-fired steam boilers ranging from 6.695 to 20.085 MMBtu/hr.

In this permit action, the Source has submitted a Form 7 air permit application requesting an amendment to their Article 5 SOP to incorporate the addition of a diesel-fired Caterpillar 1,500 kW emergency generator and a 16.329 MMBtu/hr Cleaver Brooks natural gas/distillate oil-fired steam boiler at the healthcare facility.

II. Project Description And Affected Emission Unit(s)

The steam boiler (Equipment Ref. No. B-6), as listed in the Source's submitted Form 7 air permit application, is a 16.329 MMBtu/hr Cleaver Brooks, Model # ICB-200-400-150 boiler having a dual-fuel burner system capable of burning either natural gas (NG) or #2 distillate oil. The Source was notified by DEQ air permitting staff that should the application be processed using the requested increase of 10,000 gal/yr added to the currently permitted #2 distillate oil throughput of 1,281,440 gallons/year, the medical facility would become a major source for NOx emissions. Based on this notification from DEQ, the Source requested an amendment to their Form 7 air permit application to adjust (reduce) the requested throughput of #2 distillate oil to 950,000 gal/yr for the combined boilers in order to stay out Title V status and to specifically allow for the use of #2 distillate oil only as a back-up fuel during periods of natural gas curtailment and/or supply interruption.

The requested stationary emergency generator set (Equipment Ref. No. EG-12) would consist of a 1,500 kW SR4B Caterpillar generator, powered by a 2,011 BHP Model 3512C EPA Tier II certified (2009) diesel engine. EPA regulations allow for the continued use of Tier II certified diesel engines on emergency gensets.

III. Regulatory Review

A. 9VAC5 Chapter 80, Part II, Article 6 – Minor New Source Review

Applicability of the project to Article 6 permitting for criteria pollutant emissions was determined. The 16.329 MMBtu/hr steam boiler (Equipment Ref. No. B-6) and the stationary emergency generator set (Equipment Ref. No. EG-12) were each first evaluated based on size per 9VAC5-80-1105 B of Article 6. The proposed boiler is designed to burn both gaseous and liquid fuels. As previously mentioned, the medical facility has stated in its current application that #2 distillate oil will be used only as a back-up fuel in all the boilers during periods of natural gas curtailment and/or supply interruption. In accordance with 9VAC5-80-1105 B.1.a.(3), fuel burning units using liquid and gaseous fuels having a maximum heat input greater than 10 MMBtu/hr are not exempt from permit requirements. Therefore, Article 6 and BACT for NOx emissions are applicable to this boiler unit (see attached *RRMC Boiler B-6 Permit Applicability* spreadsheet).

Likewise, permitting applicability to Article 6 of the Regulations was evaluated for the 2,011 brake horsepower (BHP) diesel-fired engine used in the new 1,500 kW stationary Caterpillar emergency genset (Equipment Ref. No. EG-12) using DEQ *APG-354* policy guidance. In accordance with this policy guidance, permit applicability for emergency generators is first determined by comparing the generator's size (either the engine horsepower rating or generator's kilowatt output) to the exemption rates in 9VAC5-80-1105 B. 2. b of the Regulations. As the 2,011 BHP rating of the diesel engine is greater than the 1,675 bhp size exemption criteria for diesel engines powering electrical generators that do not exceed 500 operating hours per year, the genset is not exempt from Article 6 permitting based on size.

If the emergency generator EG-12 is not exempted by size, then the next step is to determine the engine's uncontrolled emissions at 500 operating hours and compare them to the emission exemption criteria listed in 9VAC5-80-1105 C or D (new or project) in Article 6:

Emergency Genset - Uncontrolled Emissions Increases to Determine Permit Applicability at 500 hrs/yr

Criteria Pollutant	Uncontrolled Emissions (tpy)	Article 6 Exemption Level 9VAC5-80-1105D. (tpy)	Article 6 Permit Required?
PM	0.35	15	No
PM_{10}	0.35	10	No
$PM_{2.5}$	0.35	6	No
SO_2	0.01	10	No
NO_x	**12.07**	10	**Yes**
CO	2.77	100	No
VOC	0.32	10	No

As the NOx emissions from the 2,011 BHP diesel-fired engine were determined to be greater than the Article 6 exemption level (9VAC5-80-1105 D) for a project, the emergency genset EG-12 will require permitting and NOx BACT applicability applies to the emergency genset engine.

B. 9VAC5 Chapter 80, Article 5 – State Operating Permit

Riverside Regional Medical Center was issued a State Operating Permit (SOP) on April 20, 1998 to synthetically limit the healthcare facility's potential-to-emit (PTE) to levels below the major source threshold of 100 tons/yr and 10/25 tons/yr for toxics (HAPs). The Source currently operates under a SOP issued on June 1, 2011.

C. 9VAC5 Chapter 80, Part II, Article 8 - PSD Major New Source Review and Article 9 - Nonattainment Area Major New Source Review

Newport News, Virginia is a Prevention of Significant Deterioration (PSD) area for all regulated NSR pollutants as designated in 9VAC5-20-205. Under the PSD program, only major stationary sources of regulated NSR pollutants are potentially subject to PSD permitting rules (9VAC5-80-1605 et seq). A PSD major source is defined as one that emits or has the potential to emit (PTE) any regulated NSR pollutant greater than 250 tons per year or 100 tons per year if the facility is classified as one of the 28 industries/industrial processes listed in 9VAC5-80-1615 C. As this facility is not listed as one of the 28 source categories, the applicable major source threshold is 250 tons per year. After the issuance of this SOP, the facility will not have the potential to emit any NSR-regulated pollutant at a major stationary source level of 100 tons or more per year. The project by itself does not have a major stationary source PTE. Therefore, PSD review does not apply.

D. 9VAC5 Chapter 50, Part II, Article 5 - NSPS

The 16.329 MMBtu/hr Cleaver Brooks steam boiler is subject to 40 CFR 60 (NSPS), Subpart Dc - *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* standards of performance (amended June 13, 2007) for steam generating units which construction, modification, or reconstruction was started after June 9, 1989, and that have a maximum design heat input capacity of between 10 and 100 MMBtu/hr.

There are two (2) emission standards in NSPS, Subpart Dc; one for sulfur dioxide (SO_2) (40 CFR 60.42c) and the other for particulate matter (PM) (40 CFR 60.43c). Facilities subject to NSPS, Subpart Dc can choose to comply with either a SO_2 emission limit of 0.5 lbs SO_2/MMBtu heat input or a fuel oil sulfur limit of 0.5% sulfur by weight. Facilities are allowed to use certification receipts from their fuel supplier to demonstrate that the fuel oil sulfur content of the distillate oil delivered is below the 0.5% sulfur by weight limit. Riverside Regional Medical Center uses this method of demonstrating compliance with the NSPS, Subpart Dc SO_2 emission standard. The amount of distillate oil and the amount of NG that boilers subject to NSPS, Subpart Dc consume must be recorded on a monthly basis in the form of fuel billings or meter readings. The NSPS, Subpart Dc standard for particulate matter (opacity limits) applies only to those boilers with heat input capacities between 30 and 100 MMBtu/hr. The 16.329 MMBtu/hr Cleaver Brooks steam boiler is below the minimum heat input capacity rating for the NSPS, Subpart Dc opacity limits to be applicable.

In addition, the new 1,500 kW stationary Caterpillar emergency generator is subject to NSPS, Subpart IIII for its 2,011 BHP diesel-fired engine. The applicable requirements of NSPS, Subpart IIII as they apply to this compression-ignition (CI) engine are not cited in the SOP due to the fact that the NSPS has not been delegated to Virginia.

E. 9VAC5 Chapter 60, Part II, Article 1 - NESHAPS

There are currently no NESHAPS (9VAC5-60-60) requirements which are applicable to the facility or to this permit action.

F. 9VAC5 Chapter 60, Part II, Article 2 - MACT

Currently, Riverside Regional Medical Center is subject to two (2) MACT Subparts: JJJJJJ and ZZZZ. The MACTs are not cited in the SOP as Virginia has not accepted delegation of either MACT as of the issuance date of this permit. This permit action does affect the applicability of MACT, Subpart JJJJJJ to the facility. According to MACT, Subpart JJJJJJ, a gas-fired boiler includes any boiler that burns gaseous fuels that is not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, and/or periodic testing on liquid fuel. As previously stated, the boilers at the medical facility will each fire NG as the primary fuel and #2 distillate oil only as backup fuel. Under this operating scenario, each boiler would be classified as a gas-fired boiler and not be subject to MACT, Subpart JJJJJJ (40 CFR 63.11237 definition of "gas-fired boiler"). The rule "once in always in" for a MACT rule does not apply to area sources such as is the case for the Riverside Regional Medical Center. According to the Federal Register excerpts from the background document and preamble, if a boiler becomes a "gas-fired boiler" by definition, then it is no longer subject to the MACT (**http://www.gpo.gov/fdsys/pkg/FR-2013-02-01/pdf/2012-31645.pdf**), However, if a switch back to #2 distillate oil is made, an initial notification of applicability within 30 calendar days of the fuel switch must be submitted to EPA. Compliance must then be demonstrated within 180 days, and continuing compliance demonstration such as bi-annual tune-ups has to be met.

IV. Best Available Control Technology Review (BACT) (9VAC5-50-260)

BACT applicability is determined on a pollutant-by-pollutant basis using the permitting applicability thresholds, in the same manner as used for Article 6 permit applicability. Each affected emissions unit emitting a pollutant that is subject to permitting must apply BACT for that pollutant (9VAC5-50-260 B). This permit action triggered BACT for NOx emissions from the boiler B-6. The diesel engine used in the stationary emergency genset EG-12 also triggered BACT for NOx emissions. BACT for NOx emissions from the boiler will consist of the use of low NOx burner technology. BACT for the NOx emissions from the new emergency genset EG-12 diesel engine is to meet the EPA emission standards for Tier 2 engines. In addition, BACT will include the use of best management practices consisting of, but not limited to, proper engine maintenance and limiting the operating hours of the genset. The use of any add-on pollution devices on the diesel engine to control NOx emissions would be cost prohibitive.

V. Summary of Actual Emissions Increases

With the requested change to the permitted #2 distillate oil throughput for the operation of the combined boilers, the emissions for these units were re-calculated based on a maximum of 442.12 MMscf/yr of natural gas usage and a requested throughput of 950,000 gallons/yr for #2 distillate oil. Emissions from the operation of the EG-12 emergency genset at the medical facility were based on 365 operating hours/yr, as requested by the Source. The combined boiler emissions and combined emergency genset emissions are summarized in the table below. These calculated emissions were used to establish the amended SOP limits for pollutants with emissions of 0.5 ton/yr or greater.

Facility wide Controlled Emissions

Criteria Pollutant	NG/DO Boilers (tpy)	Emergency Generators (tpy)	Total Facility wide Emissions (tpy)
PM	2.63	1.39	4.02
PM_{10}	0.90	1.39	2.29
$PM_{2.5}$	0.90	1.39	2.29
SO_2	33.86	0.31	34.17
NO_x	31.61	46.45	78.06
CO	20.94	11.31	32.25
VOC	1.31	1.53	2.84

By reducing the #2 distillate oil throughput for the boilers by 321,440 gallons to 950,000 gals/yr, facility wide NOx emissions were able to be reduced from 98.8 tpy to 78.1 tpy. Since there is a change in the case by case determination of the medical facility's emissions, this action results in a significant amendment to the June 1, 2011 SOP.

VII. Boilerplate Deviations

The Skeleton SOP boilerplate was used to develop this permit. There are no deviations from the boilerplate; however while the permit was open, the 2011 permit was updated with the current boilerplate language and procedures.

VIII. Compliance Demonstration

Compliance will be demonstrated by visible emissions observations (VEO), fuel throughput and specification requirements, compliance with NSPS, Subpart Dc regulations, and the applicable recordkeeping as outlined in the permit.

IX. Title V Review - 9VAC5 Chapter 80, Part II, Article 1

After the issuance of this permit, the Healthcare facility will not have a PTE for any regulated NSR pollutant greater than the 100 tons/year Title V major source threshold. The facility is not in a category required to obtain a Title V permit regardless of emission rate; therefore, Title V permitting does not apply.

X. Other Considerations

According to the full compliance evaluation (FCE) conducted on 3/5/2013, it was noted that the medical facility has only one (1) natural gas flow meter and one (1) #2 distillate oil storage tank for all of the boilers. The question was raised as to the need for separate permitted emission limits for the boilers (based on what appears to be heat input capacity size in MMBtu/hr) instead of only a single set of permitted emission limits for all of the boilers combined since it does not matter which boiler(s) is operating when the fuel all comes from the same fuel storage tank. Therefore, to address this question/comment, the individual permitted fuel throughputs for the natural gas and distillate oil burned in the various boilers were combined into a single combined total throughput for natural gas and another for distillate oil to simplify the boiler fuel throughput recordkeeping requirements in the amended SOP.

Likewise, in a similar manner, the permitted emission limits from the various "grouped" emergency generators were combined together to create a single set of permitted emission limits for all of the gensets. Compliance and recordkeeping with the permitted emission limits did not change as the emissions are based on the actual operating hours for each individual genset as was in the previous SOP. The SO_2 emissions for the genset

diesel engines were revised from the previous SOP as all stationary generator diesel engines are required to use ULSD fuel (15 ppm (0.0015%) based on the MACT, Subpart ZZZZ requirements.

XI. Recommendations

Recommend Approval.

Final Recommendation: Recommend Approval.

Permit Writer's Signature: _____

Air Permit Manager's Signature: _____